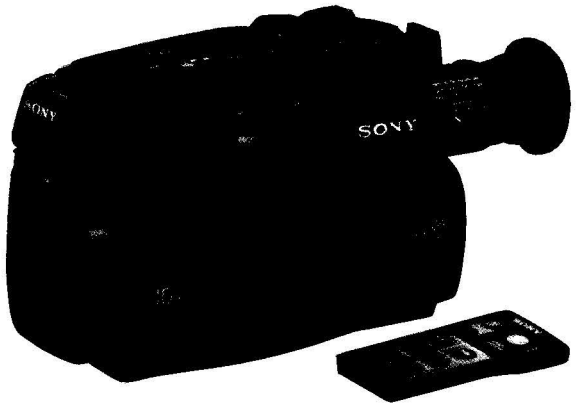
CCD-TR305
RMT-701



AEP Model
UK Model
E Model
Australian Model
Tourist Model

Video8 Handycam

SPECIFICATIONS

System

Video recording system
Four Rotary heads, Helical scanning FM system
Audio recording system
Four Rotary heads, Helical scanning FM system
Video signal PAL colour, CCIR standards
Usable cassette 8 mm video format cassette
Tape speed SP mode: Approx. 20.051 mm (13/16 inch)/second
LP mode: Approx. 10.058 mm (13/32 inch)/second
Recording time SP mode: 1 hour and 30 minutes (P5-90)
LP mode: 3 hours (P5-90)
Playback time SP mode: 1 hour and 30 minutes (E5/P5-90)
LP mode: 3 hours (P5-90)
Fast-forward/rewind time
Appros. 8.5 min. (E5/P5-90)
Image device CCD (Charge Coupled Device)
Viewfinder Electronic viewfinder (black and white)
Lens Combined 10 × power zoom lens
f = 6.2 – 62 mm (1/4 to 2 1/2 inches)
F 1.6
(44.6 to 446 mm (1 13/16 to 17 5/8 inches) when converted to a 35-mm still camera)
37 mm (1 1/2 inches)

Autofocus sytem
TTL autofocus sytem inner focus wide macro system
Colour temperature
Automatic
Minimum illumination
3 lx (F 1.6)
Illumination range
3 lx – 100,000 lx
(0.3 – 9,920 footcandles)
Recommended illumination
More than 100 lx (9.3 footcandles)

Input and output connector

AEP, UK model

Video output Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio output Phono jack (2)
Output: – 7.5 dBs (at output impedance 47 kilohms)
impedance less than 2.2 kilohms

— Continued on next page —

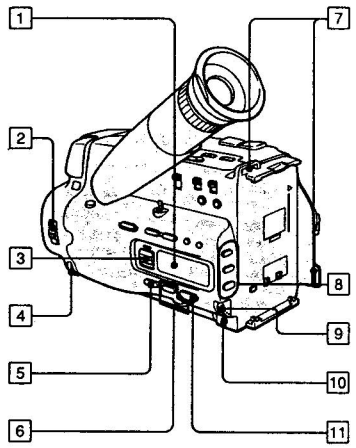
8 VIDEO CAMERA RECORDER

SONY®

MICROFILM

Identifying the Parts

(B-1)



For details on the use of each control, refer to the pages indicated in the circle.

(B-1)

[1] **Display window** ●

[2] **LENS COVER switch** ●

[3] **AUTO LOCK switch** ●, ●

[4] **FOCUS MANUAL dial** ●

[5] **FOCUS button** ●

[6] **EXPOSURE button and EXPOSURE dial** ●

[7] **Hooks for shoulder strap**

[8] **Superimpose buttons** ●–●

MEMORY button
COLOR/MODE button
SUPERIMPOSE ON/OFF button

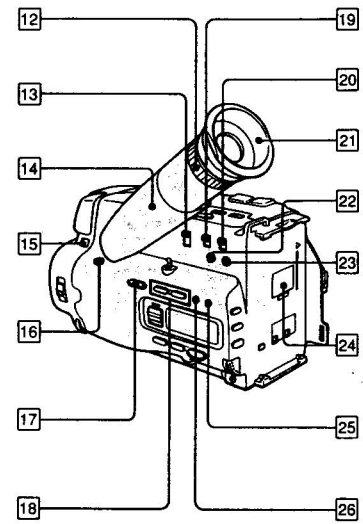
[9] **BATT (battery eject) knob** ●

[10] **REMOTE (LANC)* control jack (stereo mini-mini-jack)**
Connect a wired remote control unit, an editing controller, or other equipment here.

[11] **PROGRAM AE button** ●

* **About (LANC)**
(LANC) stands for Local Application Control Bus System. The (LANC) connector is used for controlling the tape transport of video equipment and the peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

(B-2)



(B-2)

[12] **Viewfinder lens adjustment ring** ●

[13] **Hi-Fi SOUND switch** ●

[14] **Viewfinder** ●
You can monitor the monochrome picture being recorded or played back.

[15] **Remote sensor** ●

[16] **PUSH FOCUS HOLD button** ●

[17] **DIGITAL PICTURE button** ●

[18] **DATE (+) and TIME (NEXT) buttons** ●

[19] **REMOTE COMMANDER ON/OFF switch** ●

[20] **REC MODE (recording mode)/EDIT switch** ●, ●

Mode	Recording	Playback	Editing
Setting	REC MODE SP L LP	EDIT	EDIT
Function	Recording mode switch	EDIT switch	

[21] **Eyecup**

[22] **SUMMERTIME button** ●

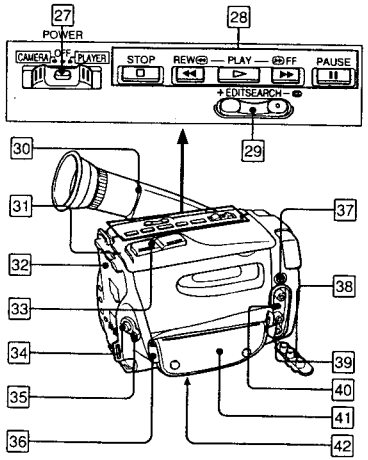
[23] **AREA button** ●

[24] **Lithium battery compartment** ●

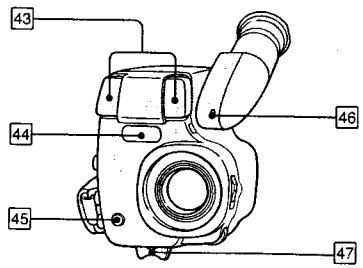
[25] **ZERO MEM (zero memory) button** ●, ●

[26] **COUNTER RESET button** ●

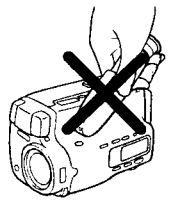
(B-3)



(B-4)



(B-5)



(B-3)

27 **POWER switch**

28 **Tape transport buttons**
- ▷ PLAY (playback)
- ▶▶ FF (fast forward)
- ◀◀ REW (rewind)
- □ STOP
- ❚❚ PAUSE

29 **EDITSEARCH button** ㉖, ㉗

30 **Camera recording/battery lamp**

31 **EJECT button (below the lid)** ㉑

32 **Battery mounting surface**

33 **Power zoom button** ㉕, ㉖

34 **START/STOP button** ㉘

35 **STANDBY switch** ㉓

36 **Grip strap**

37 **MIC jack (PLUG IN POWER) (stereo minijack**

38 **Jack cover**

39 **VIDEO/AUDIO output jacks (phono jacks)** ㉛–㉞

40 **RFU DC OUT (RFU adaptor DC output) jack (special minijack)** ㉜, ㉞

41 **Grip strap cover**

42 **Tripod receptacle (bottom)**

(B-4)

43 **Built-in microphone (stereo)**

44 **Remote sensor** ⑦

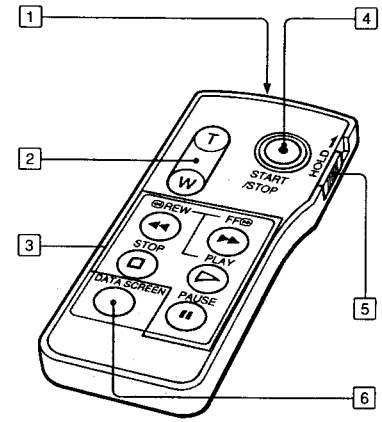
45 **FADER button** ㉔

46 **Camera recording/battery lamp**

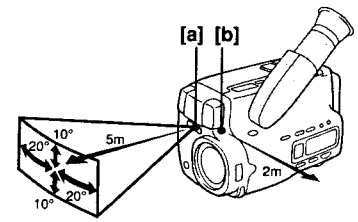
47 **Stand**

Caution (B-5)
Do not pick up the camcorder as shown in the illustration.

(B-6)



(B-7)



Wireless Remote Commander

You can remotely record or play back a tape. The buttons on the Remote Commander with the same name or same mark as those on the camcorder have the same function.

When you use the Remote Commander
Be sure to insert the supplied lithium battery into it (page 10) and to set REMOTE COMMANDER [8] ON/OFF on the camcorder to "ON".

(B-6)

1 **Transmitter**

2 **Power zoom button**

3 **Tape transport buttons**

4 **START/STOP button**

5 **HOLD switch***
Slide in the direction of the arrow to prevent the buttons from being accidentally depressed.

6 **DATA SCREEN button*** ㊱
Press to erase or display the on-screen display.

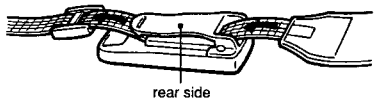
Note
The * indicates the function which is operable only with the Remote Commander.

Remotely controllable area (B-7)
Point the Remote Commander towards the remote sensor **[a]**.
The unit has another remote sensor **[b]**.

Notes on the Remote Commander
- **Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise the remote control may not be effective.**
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works through the signals of commander mode VTR 2. A commander mode is used to distinguish this camcorder from other Sony VTR to avoid misoperation. If you use another Sony VTR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

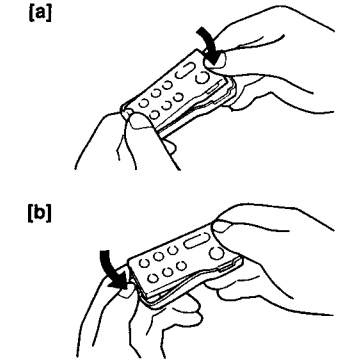
Identifying the Parts

(B-8)



Using the Remote Commander holder
You can clip the Remote Commander holder on your coat pocket or belt, or also slide it onto the shoulder belt before attaching the Remote Commander to it. **(B-8)**

(B-9)

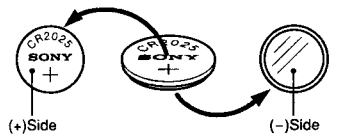


(B-9)

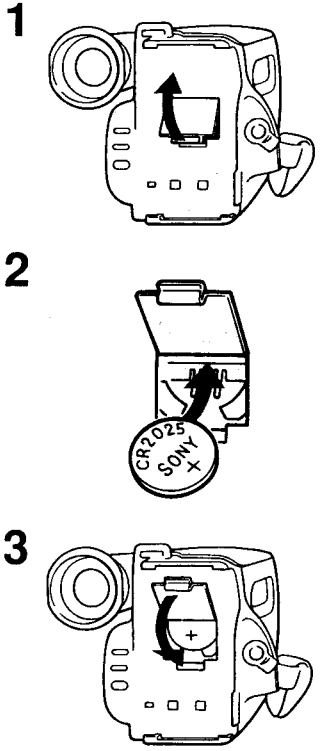
[a] When attaching the Remote Commander to the Remote Commander holder

[b] When detaching the Remote Commander from the Remote Commander holder

(C-1)



(C-2)



Inserting the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a + (plus) side and a − (minus) side as illustrated. **Be sure to install the lithium battery with the correct polarity. (C-1)**

Inserting the Lithium Battery into the Camcorder

(C-2)

This camcorder uses a lithium battery to activate the clock and to keep a title in memory. At first install the supplied lithium battery.

1 **Open the lid of the lithium battery compartment.**

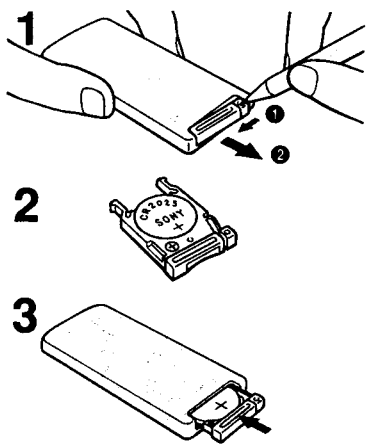
2 **Install the supplied CR2025 lithium battery with the + side facing out.**

3 **Close the lid.**

To change the lithium battery
Remove the battery pack, open the lid of the lithium battery compartment, and replace the lithium battery with a new one.
After replacing the battery, readjust the date, time and title.

Inserting the Lithium Batteries

(C-3)



Inserting the Lithium Battery into the Remote Commander

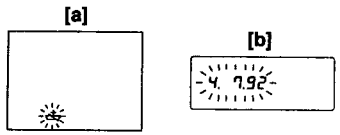
(C-3)

1 **Pull out the lithium battery holder from the Commander.**

2 **Install the lithium battery with the + side facing upward.**

3 **Put the lithium battery holder back into the Commander.**

(C-4)



Lithium battery life (under normal operation)

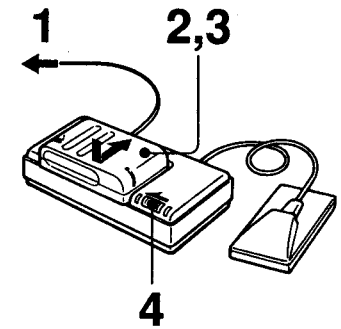
(C-4)

The battery for the camcorder lasts for approximately 1 year.
When the battery becomes weak, the ⚓ indicator will flash inside the viewfinder for about 5 seconds (when the POWER switch is set to CAMERA) **[a]** and the tape counter or date (or time) will flash in the display window for about 5 seconds **[b]**.
The battery for the Remote Commander lasts for approximately 6 months. When the battery becomes weak or dead, the Commander does not work.
In either case, replace the battery with a Sony CR2025 battery. Use of any other type of battery may present the risk of fire or explosion.

CAUTIONS

- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated.
  Do not recharge, disassemble, or dispose of in fire.

(D-1)



Preparing your camcorder 2

Connecting the Power Sources

First, Choose the Power Source.

Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-55H, NP-66H, NP-77, NP-77H, NP-77HD
	Alkaline batteries	Battery case EBP-77
Indoors	House current	AC power adaptor AC-V35 or AC-V35A (supplied), AC-V55, AC-S10
In the car	12V or 24V car battery	DC pack DCP-77, AC power adaptor AC-V55, the car battery cord DCC-16AE and the car battery charger DC-S10

For details, see the operation manual of the accessory you want to use.

Using the Battery Pack

Step 1

Charge the battery pack. (D-1)

1 **Connect the AC power adaptor to a wall outlet.**

2 **Align the right side of the battery pack with the line on the AC power adaptor.**

3 **Slide in the battery pack to the right.**

4 **Set the selector to "CHARGE" position.**
When charging is finished, the charge lamp goes out.

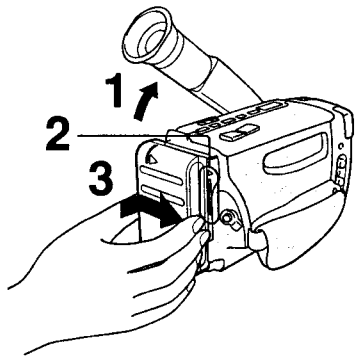
	NP-55	NP-55H	NP-77H/ 77HD	NP-77	NP-66H
Required charging time*	60	70	140	120	110
Battery life**	55	65	120	105	90

* Approximate minutes using AC-V35 or AC-V35A

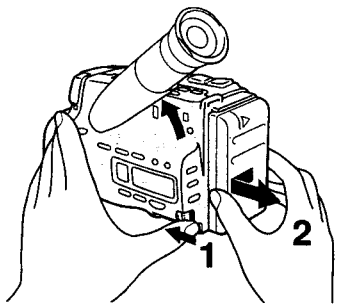
** Approximate minutes using fully charged battery pack, continuous recording indoors

(continued)

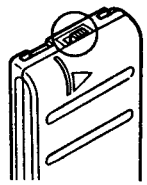
(D-2)



(D-3)



(D-4)



Step 2

Mount the battery pack on the camcorder. (D-2)

1 Lift up the viewfinder.

2 Align the right side of the battery pack with the white line on the camcorder.

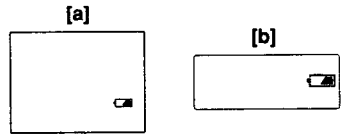
3 Slide the battery pack to the right.

Note
Make sure the battery fits completely on the mounting surface of the camcorder.

To remove the battery pack (D-3)
1 While pressing the BATT knob in the direction of the arrow, 2 slide the battery pack to the left and pull it out as illustrated.

How to use the switch on the battery pack (D-4)
This switch is provided so that you can remember the charging condition. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is dead.

(D-5)



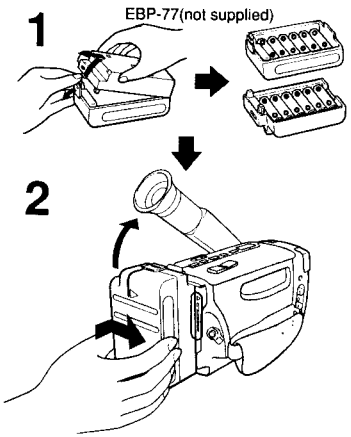
Connecting the Power Sources

Battery life indicator
You can check the remaining battery capacity with the battery life indicator inside the viewfinder **[a]** and in the display window **[b]**. The decreasing black bar indicates decreasing battery power. **(D-5)**

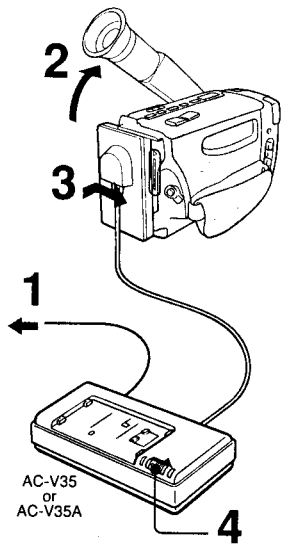
Note
The battery life indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack. The indicator of NP-77HD is more accurate.

Other options for charging
- AC-V55 AC power adaptor:
  You can charge two battery packs simultaneously.
- AC-S10 AC power adaptor:
  This adaptor has a discharging function. When you want charging only, slide the skip switch on the adaptor in the direction of the arrow.
- BC-55 portable battery charger:
  You can charge a battery pack on 100 – 240 V AC.
- DC-V30 car battery charger:
  You can charge a battery pack by connecting the car battery charger to the cigarette lighter socket. This battery charger also supplies power for Sony 8 mm equipment that operates on a battery pack.
- DC-S10 car battery charger:
  This charger has a discharging function. When you want charging only, slide the skip switch on the charger in the direction of the arrow.

(D-6)



(D-7)



Connecting the Power Sources

Using Alkaline Batteries

(D-6)

1 Insert 12 R6 (AA) size alkaline batteries into the battery case.

2 Attach the case in the same way as the battery pack.

Battery life (when using Sony alkaline batteries)
The battery lasts for approximately 2 hours and 15 minutes under continuous recording indoors. However, when you use non-Sony alkaline batteries, their life may shorten.

Notes on battery life
- Batteries will not last as long in cold places.
- No indication appears inside the viewfinder when the batteries are weak.

To remove the battery case
Remove it in the same way you do the battery pack. See page 12.

Using House Current

(D-7)

1 Connect the AC power adaptor to a wall outlet.

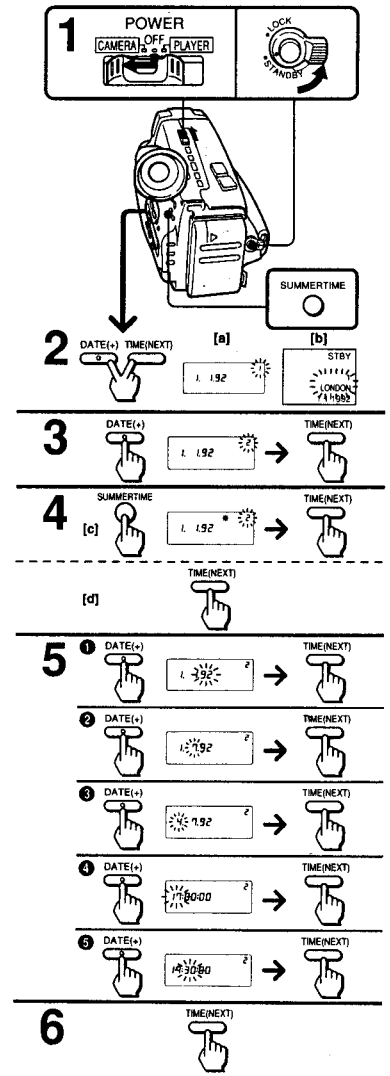
2 Lift up the viewfinder.

3 Align the right side of the connecting plate with the white line on the camcorder, and slide it in to the right.

4 Set the selector to "VTR (DC OUT)" position.

To remove the connecting plate
Remove it in the same way you do the battery pack. See page 12.

(F)



Setting the Date and Time

(F)

Make sure that a power source and lithium battery are installed.

1 While pressing the green button, set the POWER switch to CAMERA, and turn STANDBY up.

2 Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds until "1" flashes in the display window [a] and "1 LONDON" flashes inside the viewfinder [b].
DATE (+) now functions as + (to advance numbers) and TIME (NEXT) functions as NEXT (to execute).

3 Press DATE (+) until your area name and number appear and then press TIME (NEXT).

Countries	Area name	Area number
The United Kingdom and Portugal (GMT)	LONDON	1
Other European countries (CET)	PARIS	2
Finland, Greece, etc.	CAIRO	3

4 Choose one of the following options to set the clock:
[c] To set to summer time, press SUMMERTIME. Then press TIME (NEXT). The ☀ indicator appears inside the viewfinder and in the display window.
[d] To set to standard time, press TIME (NEXT).

5 Set the year *, month, day, hour and minute, in this order.
First adjust the flashing digits with DATE (+) and then press TIME (NEXT)
* To set the year to 1992, no need to press DATE (+) in step 5 – ❶.

6 Press TIME (NEXT) to set the second.
The clock starts operating.

To correct the date and time setting
Press TIME (NEXT) repeatedly until the digits of minute stop flashing. Then repeat step 2 to 6.

Setting the Date and Time

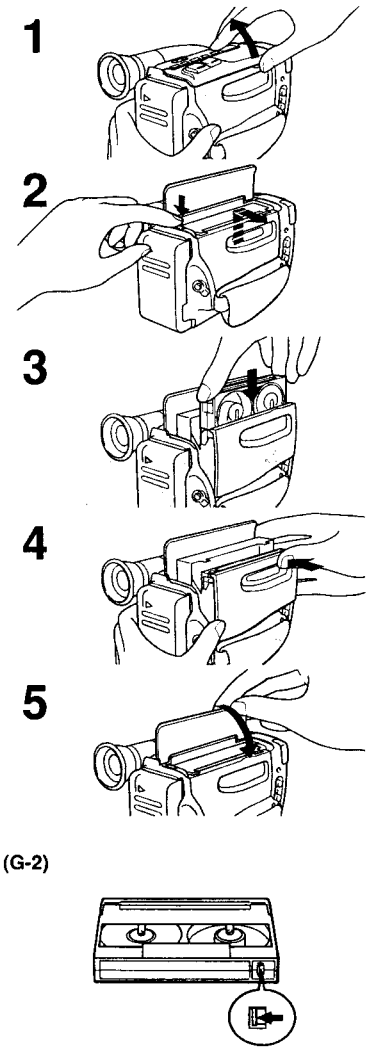
To advance the digits faster
Keep DATE (+) pressed.

To check the preset date and time
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

To reset to standard time
Press SUMMERTIME. The ☼ indicator goes off.

If the camcorder goes off abruptly while setting the date and time
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will go off automatically. Turn STANDBY down once and slide it up again.

(G-1)



(G-2)

Inserting a Cassette

Inserting a Cassette

(G-1)

Make sure that a power source is connected.

1 **Lift up the lid at the indentation point.**

2 **Press EJECT.**
The cassette compartment will automatically lift up and open.

3 **Insert a cassette with the window facing out.**

4 **Press the PUSH mark on the cassette compartment cover to close it.**

5 **Close the lid.**

Ejecting the Cassette

Make sure that a power source is connected.

1 **Lift up the lid at the indentation point.**

2 **Press EJECT.**

3 **Take out the cassette and press the PUSH mark on the comparment cover to close it.**

4 **Close the lid.**

Preventing Accidental Erasure

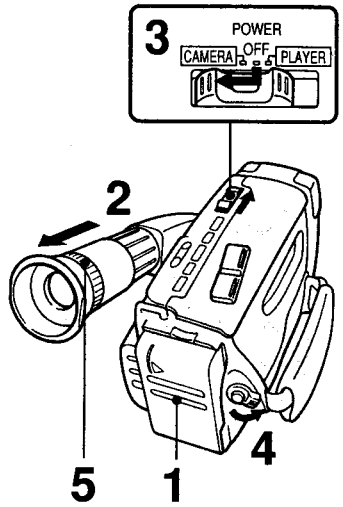
(G-2)

Slide the tab on the cassette to expose the red mark. This will prevent accidental recording.
To re-record on this tape, slide the tab back out covering the red mark.
If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash inside the viewfinder and in the display window.

Note on handling tapes
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape, or if the tab is out or in, etc.

Adjusting the Viewfinder Lens

(H)



The position of the viewfinder lens for optimum vision varies depending on the person. Adjust it when you use the camcorder for the first time, or when you use it after someone else did.
(H)

1 **Make sure that the power source is connected and that the cassette is inserted.**

2 **Pull the viewfinder out until it clicks.**

3 **While pressing the green button, set the POWER switch to CAMERA.**

4 **Turn STANDBY up.**

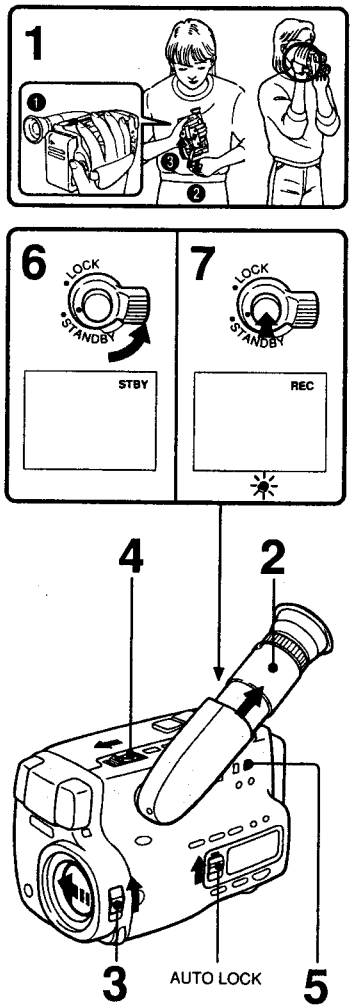
5 **Turn the viewfinder lens adjustment ring so that "STBY" displayed in the viewfinder screen comes into sharp focus.**

Recording a Picture Using Automatic Adjustments

Before recording "once-only" events, we strongly recommend you make a trial recording and check that everything is working properly.

Make sure that the AUTO LOCK switch is slid up so that the AUTO LOCK mark (green) appears. This puts everything into automatic.
(I-1)

(I-1)



Start Recording

1 **Hold the camcorder as illustrated.**

2 **Make sure that the viewfinder is pulled out.**

3 **Slide LENS COVER to OPEN.**
If it is not open, you cannot record.

4 **While pressing the green button, set the POWER switch to CAMERA.**

5 **Set the REC MODE switch to LP (long play) or SP (standard play), according to the length of your planned recording.**

6 **Turn STANDBY up.**
"STBY" appears inside the viewfinder.

7 **Press START/STOP.**
"REC" appears and the red lamp lights up inside the viewfinder. The camcorder is now recording.

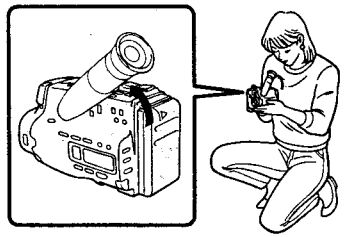
To standby (to stop momentarily)
Press START/STOP again.
"STBY" appears inside the viewfinder. The camcorder is in the standby mode again.

To stop
Turn STANDBY down and set the POWER switch to OFF.

Note
Shoot the subject at the wide-angle position in macro. At the telephoto position, if the subject is closer than 80 cm (2 ft. 7 1/2 in.), it cannot be brought into focus.

Recording a Picture Using Automatic Adjustments

(I-2)



For low-position recording (I-2)
The viewfinder can be turned 90 degrees upward.
It can be used in either the pushed-down or pulled-out position.

Near the end of the tape
The ⌧ indicator, the red lamp inside the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

Note on recording
To record from the beginning of the tape, run the tape for about 15 seconds before recording. This will avoid missing the starting point when the tape is played back.

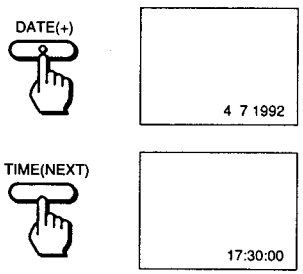
Note on the standby mode
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will go off automatically. To resume the standby mode, turn STANDBY down once and slide it up again. To start recording, press START/STOP directly.

Recording mode
You can record and play back a picture on a tape in both SP (standard play) and LP (long play) modes.
However, the quality of the playback picture in the LP mode will not be as good as that in the SP mode.

Recording Date or Time

(I-3)

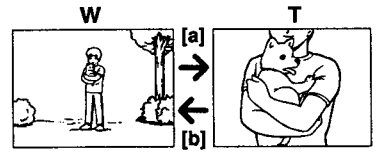
(I-3)



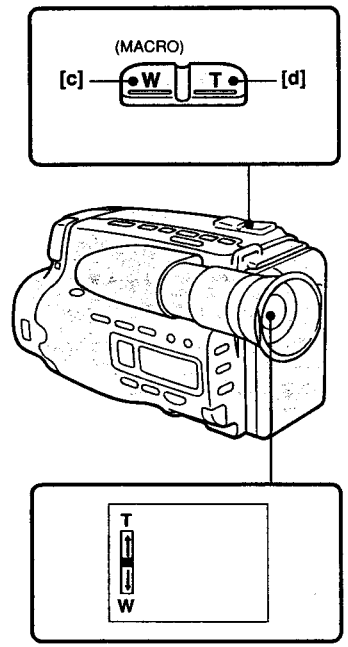
During camera recording or when in the recording pause mode, press DATE(+) for date indicator or TIME(NEXT) for time indicator.
The date or time displayed inside the viewfinder is recorded with the picture.

To stop recording date or time
Press DATE(+) or TIME(NEXT) again.
The date or time indicator disappears.
The picture recording continues.

(I-4)



(I-5)



Recording a Picture Using Automatic Adjustment

Using Zooming Features

By zooming, you can change the size of the subject in the scene. Use "zoom-in (Telephoto)" for dramatic close-ups **[a]**, and "zoom-out (Wide-angle)" for panoramic long shots **[b]**. Also use the zoom to focus manually or to decide the shooting angle.
For more professional-looking recordings, use zooming sparingly. **(I-4)**

Two-Speed Zooming (I-5)

The camcorder's power zoom button offers two-speed zooming. Press it firmly for high speed zooming and softly for relatively slow zooming.

[c] W side: for wide-angle (subject appears farther away)
[d] T side: for telephoto (subject appears closer)

Autofocusing in macro
Even small subjects, such as flowers, insects, and images in photographs, can literally fill the screen using autofocusing in macro.
We recommend you to use a tripod when shooting in macro.

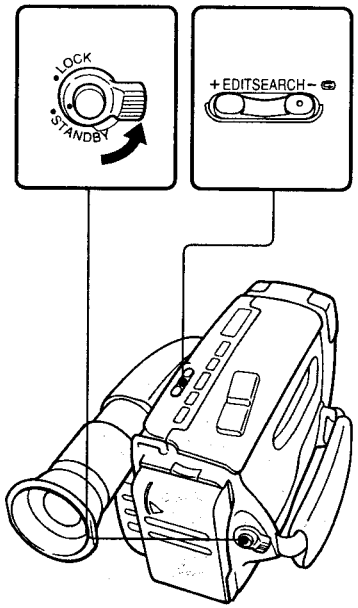
1 **Bring the camcorder as close as necessary to obtain the desired subject size.**

2 **Slide the AUTO LOCK switch up so that the AUTO LOCK mark (green) appears.**

3 **Keep pressing the W (MACRO) side of the power zoom button until the zooming stops (wide-angle).**

Manual focusing in macro
You can also shoot with manual focus while doing close-up.
For manual focusing, see page 29.

(I-6)



Checking the Recorded Picture Inside the Viewfinder (EDITSEARCH)

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture inside the viewfinder. After checking your recorded picture, you can also re-record over a previously recorded portion. **(I-6)**

To review the last recorded scene — Rec Review
You can check the last portion of a scene you just recorded in the CAMERA mode. This is convenient for quick, on-the-spot checks.

1 **Set the camcorder in the standby mode by turning STANDBY up.**

2 **Press the − side of EDITSEARCH (⊖) momentarily.**
The last few seconds of the recorded portion are played back inside the viewfinder. Then, the camcorder goes back to standby mode, ready for the next recording.

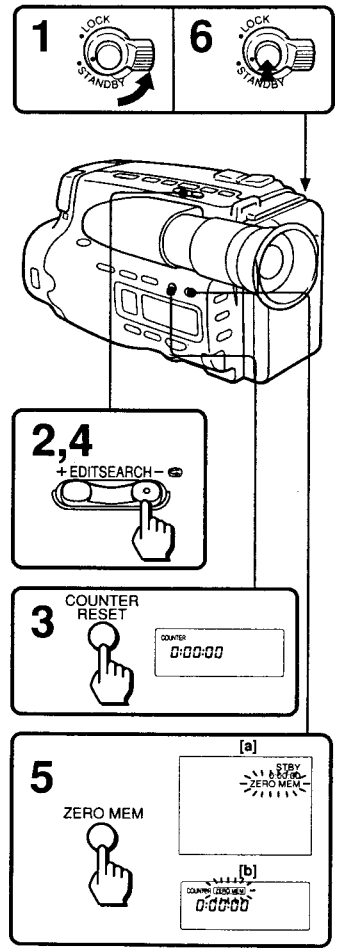
To check your recorded picture
You can check the recorded picture inside the viewfinder. After checking, you can also re-recorded over a previously recorded portion.

1 **Set the camcorder in the standby mode by turning STANDBY up.**

2 **Keep pressing the + side or − side of EDITSEARCH to play back the picture while looking inside the viewfinder.**
+ side: to view the forward playback picture
− side: to view the reverse playback picture
To stop playback, release EDITSEARCH.

3 **If you want to re-record over a recorded portion, follow the procedures below:**
❶ Press the + side or − side of EDITSEARCH to locate the point you want to begin re-recording.
❷ Press START/STOP to begin re-recording. Re-recording begins from the point you released EDITSEARCH. As long as the tape is not ejected, the transition between the scenes will be smooth.

(I-7)



Re-recording a Picture in the Middle of a Recorded Tape (Insert Recording)

(I-7)

1 **Turn STANDBY up to set the camcorder in the standby mode.**

2 **While looking inside the viewfinder, keep pressing the + or − side of EDITSEARCH and release the button where you want to end the insertion.**
The camcorder enters the standby mode again.

3 **Press COUNTER RESET.**
The counter is reset to zero.

4 **While looking inside the viewfinder, keep pressing the − side of EDITSEARCH and release the button at the point where you want to start the insertion.**

5 **Press ZERO MEM.**
The insert ending point is stored in memory.
[a] Viewfinder
[b] Display window

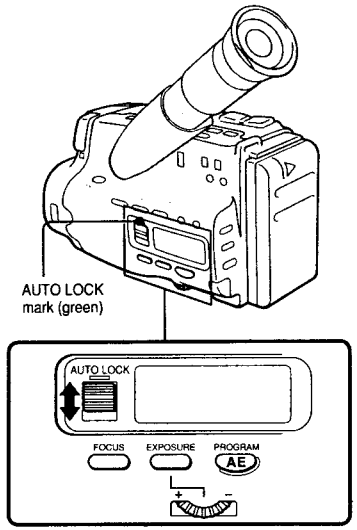
6 **Press START/STOP.**
Insert recording begins.
It stops automatically near the counter zero point.

To cancel ZERO MEM
Press ZERO MEM.

Note
The picture may be distorted at the end of the inserted portion when played back.

Selecting the Automatic or Manual Adjustment

(J)



The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for effective recording. You can manually adjust focus and exposure with this camcorder. You can also select the recording mode with the PROGRAM AE button to meet the shooting situations. **(J)**

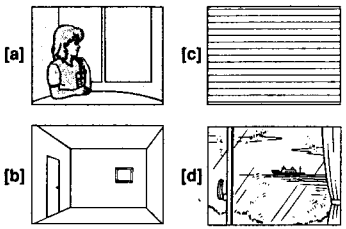
Automatic adjustment
Slide the AUTO LOCK switch up so that the AUTO LOCK mark (green) appears.
Focus and exposure are adjusted automatically with this camcorder.

Manual adjustment
Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.
You can manually adjust focus (page 29) and exposure (page 31). You can also select the recording mode ("Portrait," "Sports" or "High-speed shutter") with the PROGRAM AE button. (See page 32.)

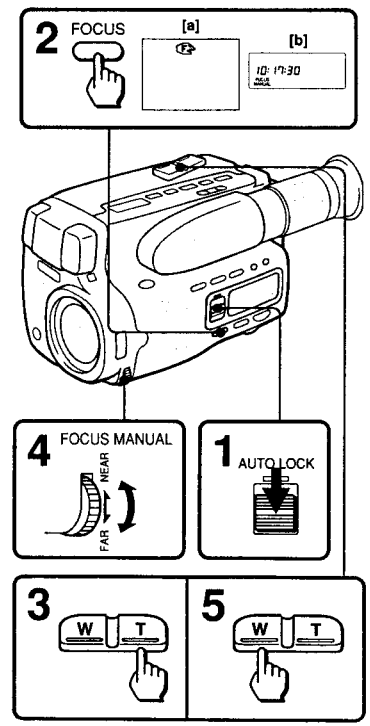
Even if you slide the AUTO LOCK switch down (in manual adjustment mode)
The settings you didn't adjust manually remain the same as those in automatic adjustment.

About the previous settings
The settings you made during manual adjustment are retained in the following cases:
- When you set the POWER switch to OFF.
- When you slide the AUTO LOCK switch up after you have made manual adjustment, and then slide it down again.
  They are canceled if more than 5 minutes pass after you have detached the power source.

(K-1)



(K-2)



Manual Focusing

We recommend manual focusing in the following cases. **(K-1)**

[a] Too bright behind the subject
[b] Subjects with little contrast—wall, sky, etc.
[c] Horizontal stripes
[d] Subject through frosted glass

- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be in focus)
- When shooting a stationary subject using tripod
- When you want to save battery power

Focusing Manually

(K-2)

1 **Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.**

2 **Press FOCUS .**
The (manual focusing) indicator appears inside the viewfinder **[a]** and the FOCUS MANUAL indicator appears in the display window **[b]**.

3 **Keep pressing the T side of the power zoom button until the zooming stops (telephoto).**

4 **Turn the FOCUS MANUAL dial to achieve sharp focus.**

5 **Keep pressing the W side of the power zoom button to obtain the desired subject size.**

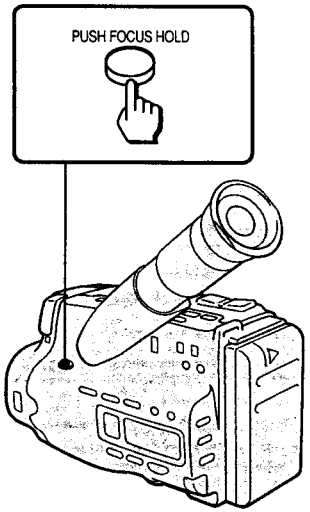
To reactivate autofocusing
Press FOCUS again, or slide the AUTO LOCK switch up so that the AUTO LOCK mark (green) appears. The indicator and the FOCUS MANUAL indicator disappear.

Shooting in relatively dark places
Shoot at wide angles after focusing in telephoto.

Note
The focus dial does not have a stop position.

Fixing the Focus to the Object

(L)



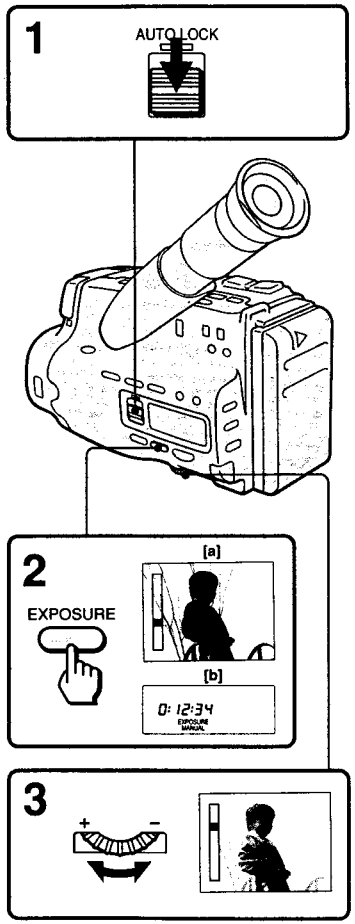
When shooting a certain object with automatic focusing, you may see that an object abruptly passing in front of the object you want to shoot is in focus and the object on which you want to focus is out of focus. In this case, use the PUSH FOCUS HOLD button to set the focus to the object you want to focus. **(L)**

1 Focus on the object you want to shoot.

2 Keep pressing PUSH FOCUS HOLD.
As long as you hold the button, the automatic focus is inactivated (the MF indicator appears inside the viewfinder) and the focus is fixed to the object you want to focus.

To restore the automatic focusing mode
Release PUSH FOCUS HOLD.

(M)



Adjusting the Exposure

In the following cases you should obtain better results by adjusting the exposure manually.

Conditions	Turn the EXPOSURE dial:
The background is too bright (backlighting)	in the + direction
Insufficient light: most of the picture is dark.	
Bright subject and dark background	in the – direction
To record the darkness faithfully	

Adjusting the Exposure Manually

(M)

1 Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.

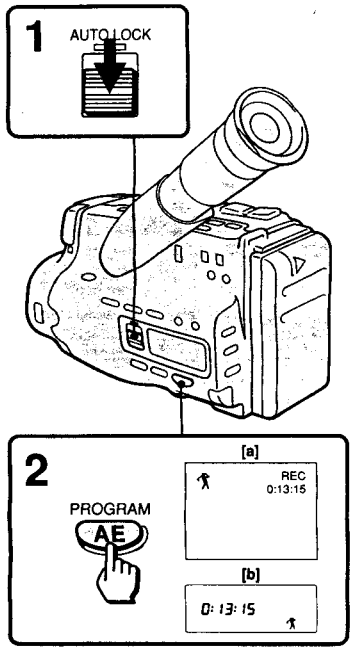
2 Press EXPOSURE.
The exposure is locked at the present brightness.
The exposure indicator appears inside the viewfinder **[a]** and the EXPOSURE MANUAL indicator appears in the display window **[b]**.

3 Adjust the exposure by turning the EXPOSURE dial in the + or – direction.
The exposure is locked at the adjusted brightness.

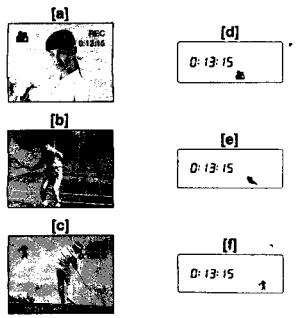
To restore the automatic exposure mode
Slide the AUTO LOCK switch up or press EXPOSURE again so that the exposure indicator inside the viewfinder and the EXPOSURE MANUAL indicator in the display window disappear.

Using the PROGRAM AE Function

(N-1)



(N-2)



When you use the PROGRAM AE (Auto Exposure) function, you can create a "portrait" effect or capture high-speed action using the "sports" mode or "high-speed shutter" mode.

(N-1)

1 Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.

2 Press PROGRAM AE.
The PROGRAM AE indicator appears inside the viewfinder **[a]** and in the display window **[b]**.

Each time you press the button, the PROGRAM AE mode indicator changes as follows:

("Portrait" mode) → ("Sports" mode) → ("High-speed shutter" mode) → No indicator (normal mode) →

To restore automatic adjustment
Slide the AUTO LOCK switch up or press PROGRAM AE again so that the PROGRAM AE indicator disappears.

To select the mode

(N-2)

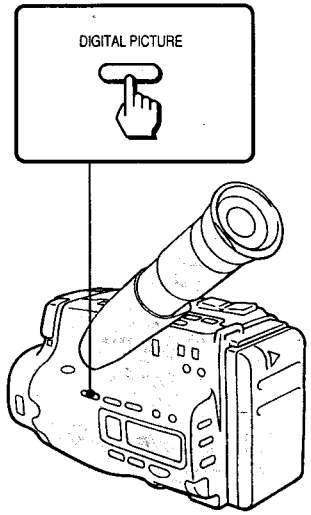
You may want to use the respective mode when shooting the following subjects or when shooting under the following conditions:

[a] [d] Portrait mode
- A still subject such as a person or flower
- Subject behind such obstacles as a net
- Zooming on a subject in the telephoto mode

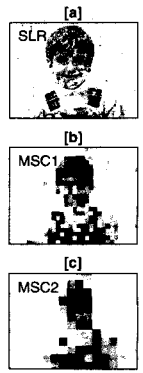
[b] [e] Sports mode
- Recording a landscape while in a moving car
- Outdoor sports scene such as football or tennis
- Subjects moving at high speed, such as a roller coaster on a cloudy day

[c] [f] High-speed shutter mode
- Shooting a golf swing or a tennis match with the tennis ball captured clearly on a fine day
- You wish to play back certain scenes having high speed movement and getting a clear, sharp picture

(O-1)



(O-2)



Notes
- As long as the PROGRAM AE indicators are displayed inside the viewfinder and in the display window, you cannot adjust exposure manually. If you should press EXPOSURE when the PROGRAM AE indicator is displayed, the PROGRAM AE function is canceled and the exposure adjustment function starts to operate. To restore the PROGRAM AE function, press PROGRAM AE again.
- The shutter speed in each PROGRAM AE mode is as follows:
  Portrait mode — between 1/50 to 1/1650
  Sports mode — between 1/50 to 1/500
  High-speed shutter mode — 1/4000

Using the Digital Picture Function

When you use the digital picture function, you can record the picture with a solarization effect or two types of mosaic effect.

(O-1)

Press DIGITAL PICTURE during recording or in the recording standby mode.
Each time you press the button, the indicator inside the viewfinder changes as follows:

SLR (solarization) → MSC1 (mosaic 1) → MSC2 (mosaic 2) → No indicator (normal picture) →

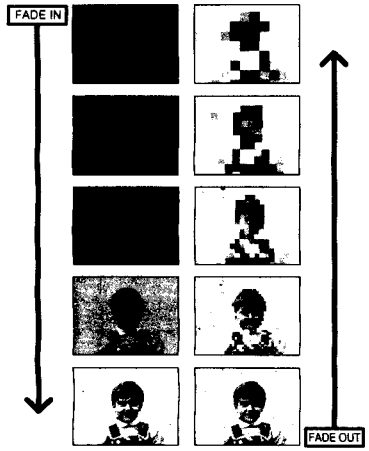
(O-2)

[a] Picture with a solarization effect (SLR)
[b] Picture with a mosaic effect (MSC1)
[c] Picture with a mosaic effect (MSC2)

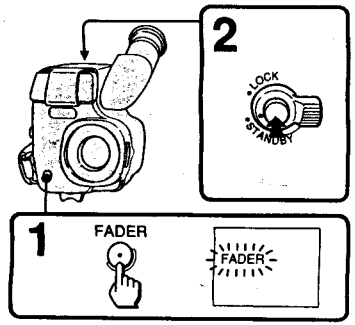
To cancel the digital picture function
Press DIGITAL PICTURE repeatedly until the digital picture indicator disappears from the viewfinder.

Fade-in and Fade-out

(P-1)



(P-2)



(P-1)

You can fade-in or fade-out to give your recording a professional appearance.
When fading-in, the picture will gradually appear from black or mosaic. The sound will also gradually increase.
When fading-out, the picture will gradually fade to black or mosaic. The sound will also gradually decrease.

About the FADER button (P-2)
Each time you press FADER, the indicator inside the viewfinder changes as follows:

FADER → M. FADER → (No indicator)
(black fade) (mosaic fade)

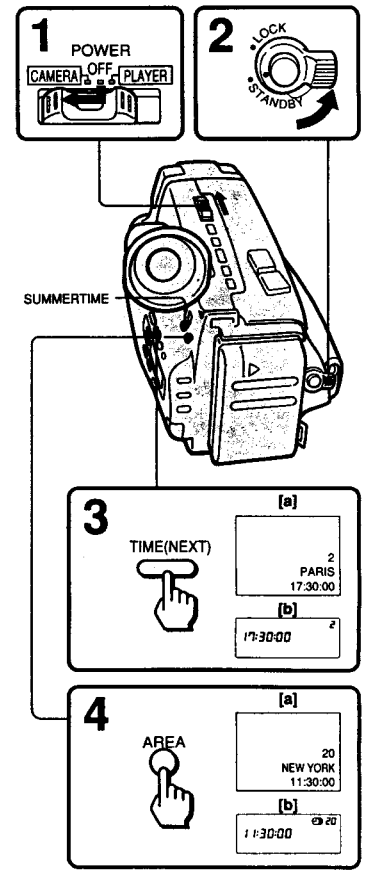
1 **Select the type of fade by pressing FADER as follows:**
[a] When fading-in, press FADER after turning STANDBY up to put the camcorder into the standby mode.
The fade indicator starts flashing.
[b] When fading-out, press FADER while recording.
The fade indicator starts flashing.

2 **Press START/STOP.**
When fading-in, the fade indicator stops flashing and the recording starts fading-in.
When fading-out, the fade indicator stops flashing and the picture fades out and then the recording stops.

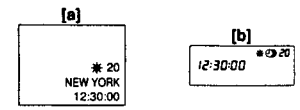
To cancel the fade-in/fade-out function before it is performed
Before pressing START/STOP, press FADER again.

Using the World Clock

(Q-1)



(Q-2)



This camcorder has a world clock. While traveling abroad, you can easily adjust time of the place where you are using the camcorder by pressing AREA.
Before pressing AREA, set the date and time in your country (see page 19). **(Q-1)**

1 **While pressing the green button, set the POWER switch to CAMERA.**

2 **Turn STANDBY up to set the camcorder in standby mode.**

3 **Press TIME (NEXT).**
The time in your country appears inside the viewfinder **[a]** and in the display window **[b]**.

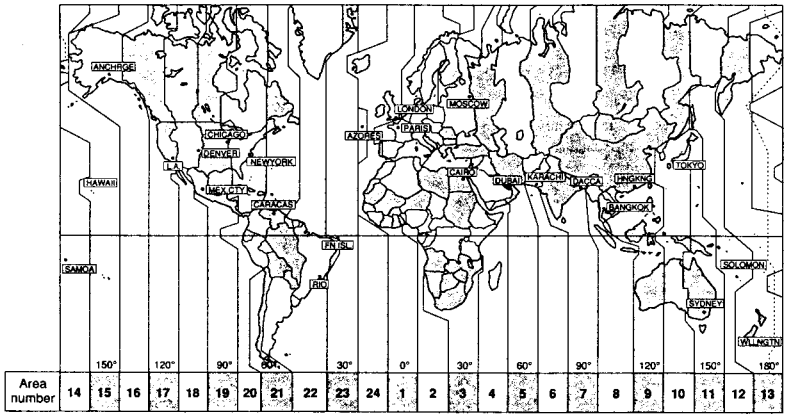
4 **Press AREA until the area name and number where you are now using the camcorder appear.**
The indicator appears in the display window. You can find the area name and number in the "Time Zone Chart" on the pages 36 and 37.

To check the date
Press DATE (+).
To turn off the date indication, press DATE (+) again.

To reset to your country area time
Press AREA until your country area and number appears.

To set summer time
Press SUMMERTIME. Time changes to summer time. ✱ indicator appears inside the viewfinder **[a]** and in the display window **[b]**. **(Q-2)**
To set to standard time, press SUMMERTIME again.

Time Zone Chart

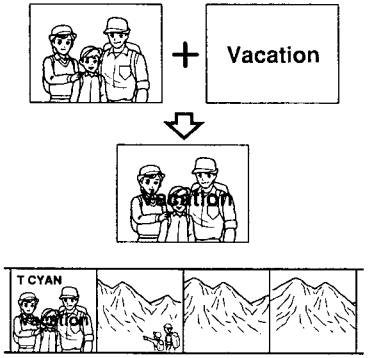


Area number	Area name	Countries or area*
1	LONDON	England, Morocco, Portugal, GMT (Greenwich Mean Time)
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CST (Continental Standard Time), Tunisia
3	CAIRO	Egypt, Finland, Greece, Turkey
4	MOSCOW	Ethiopia, Iraq, Kenya, Mauritius, Saudi Arabia, Seychells, former U.S.S.R (Moscow)
5	DUBAI	United Arab Emirates
6	KARACHI	Moldives, Pakistan
7	DACCA	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HNGKNG	Australia (Perth), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (Sydney)
12	SOLOMON	New Caledonia
13	WLLNGTN	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	Hawaii I., Tahiti, HST (Hawaii Standard Time)
16	ANCHRGE	U.S.A. (Alaska), AST (Alaska Standard Time)
17	L.A.	U.S.A. (Los Angels, San Francisco), PST (Pacific Standard Time)
18	DENVER	U.S.A. (Denver), MST (Mountain Standard Time)
19	CHICAGO	Mexico, U.S.A. (Chicago), CST (Central Standard Time)
20	NEWYORK	Canada (Montreal), Jamaica, Peru, U.S.A. (New York, Washington D.C.), EST (East Standard Time)
21	CARACAS	Chile, Dominica, Venezuela
22	RIO	Argentina, Brazil, Uruguay
23	FN ISL.	Fernando de Noronha
24	AZORES	Azores Islands

* These are common names. The formal names may be different.

Superimposing a Title

(R-1)



You can superimpose your own hand-written message or illustration (title) over the picture while you are recording. **(R-1)**

- You can store one title.
- You can select the colour of the title from 8 colours.
- You cannot superimpose a title on the tape already recorded.

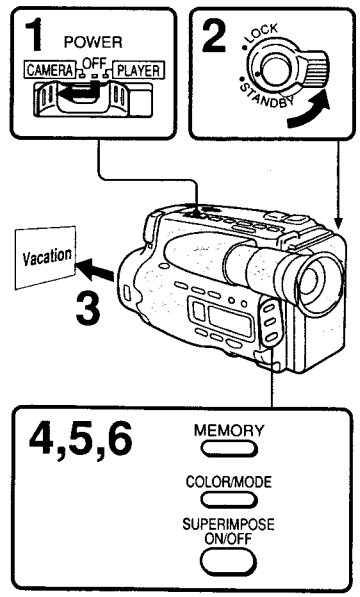
Before superimposing, store the title.

Storing a Title

Before storing

- Make the desired title card.
  Use a plain, white card and draw the title in thick, dark letters.
- Make sure the lithium battery is installed. (page 9)

(R-2)



How to store (R-2)

1 **While pressing the green button, set the POWER switch to CAMERA switch.**

2 **Turn STANDBY up to set the camcorder in standby mode.**

3 **Point the camcorder to the title card and adjust the focus.**

4 **Press MEMORY to store the title.**

5 **Press COLOR/MODE and select the title colour.**
Each time you press the button, the indicator changes as follows:

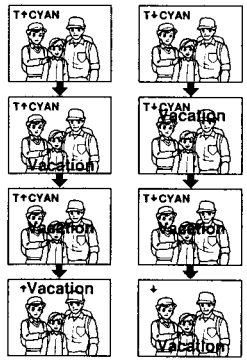
WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

6 **Press SUPERIMPOSE ON/OFF to turn off the title.**

To check the title
Press SUPERIMPOSE ON/OFF in the standby mode.

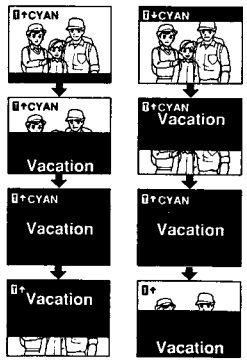
To store a new title
Repeat steps 3 and 4.

(R-3)



(R-4)

(R-5)



(R-6)

Various Display Modes of the Title

You can scroll your title like scrolling credits in the movies, or reverse the title.
Select the display mode of the title from the following table.

Display mode	Indicator in the viewfinder
Scrolling up the title (R-3)	↑
Scrolling down the title (R-3)	↓
Reversing the title with the picture (R-4)	T
Scrolling up the reversed title (R-5)	T↑
Scrolling down the reversed title (R-5)	T↓
Normal display mode	No indicator

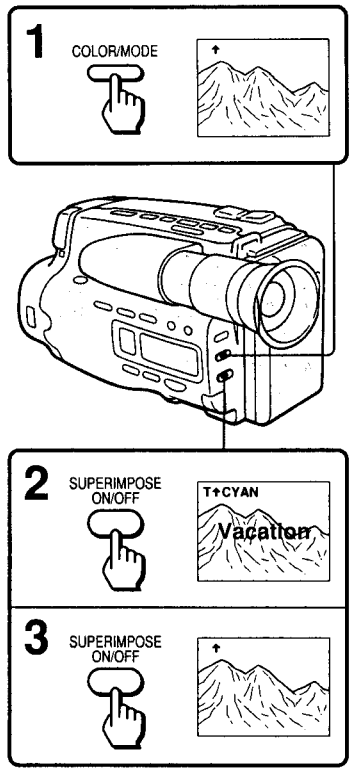
Selecting the display mode
Before displaying the title, press COLOR/MODE until the indicator of the mode you want appears. **(R-6)**

Function of the COLOR/MODE Button

This button has a double function: one is to select the title colour and the other is to select the title display mode. If the title is displayed, this button functions as the colour selection button, and if it is not, it functions as the mode selection button.

Superimposing a Title

(R-7)



Superimposing a Title on Your Tape

The following shows how to superimpose a title using an example in which the title scrolls up.
(R-7)

1 **Press COLOR/MODE to select the display mode of the title in the standby mode.**

2 **Press SUPERIMPOSE ON/OFF at the point from which you want to insert the title, during recording.**
You can change the title colour by pressing COLOR/MODE. Each time you press the button, the colour indicator changes.

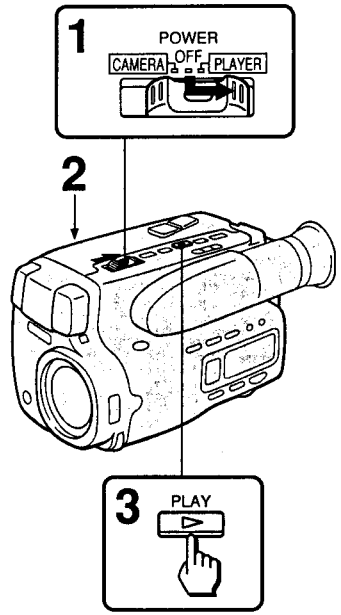
3 **Wait for a while and press SUPERIMPOSE ON/OFF again.**
The title goes out.

About the colour and the display mode indicators
The colour and the display mode indicators inside the viewfinder are not recorded.

To scroll the title without stopping at the center of the screen
Press SUPERIMPOSE ON/OFF twice continuously at the point from which you want to insert the title.

Playing Back a Tape

(T-1)



Turn on the TV, and select the channel for viewing a playback picture (set the TV/VIDEO selector to VIDEO).
Of course, you can monitor the playback picture inside the viewfinder at the same time.
(T-1)

1 **While pressing the green button, set the POWER switch to PLAYER.**

2 **Insert a tape.**

3 **Press ▷.**
Playback starts.

To view a still picture, press ❚❚ during playback.
To resume playback, press ❚❚ or ▷ again.

Notes
- **This unit has function to play back the tapes recorded in the Hi8 video system (in SP mode only), though the function it has is very basic.** You cannot get such finely detailed pictures as you could get with the video camera recorder with a Hi8 video system. Noise may result when you play back the tapes recorded in the Hi8 video system on this unit.
- When the still picture mode lasts for 5 minutes or more, the camcorder automatically enters the stop mode.

To rewind the tape, press ◀◀.

To advance the tape raidly, press ▶▶.

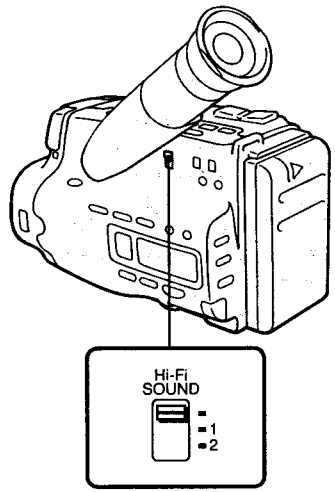
To stop the tape, press □.

To stop the tape momentarily, press ❚❚.

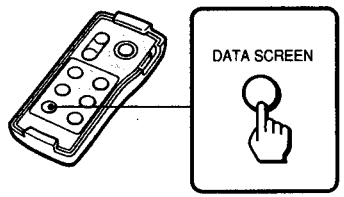
In the playback pause mode, you can view the picture in a sequence of stop-motion images by pressing EDITSEARCH. If you keep pressing EDITSEARCH, you can view the picture playback in the forward or reverse direction.

Note
Streaks appear and sound is muted in the still picture mode.

(T-2)



(T-3)



Playing Back a Tape

Monitoring a High-Speed Picture

To locate a scene (picture search)
Keep pressing ◀◀ or ▶▶ during playback. You can monitor the picture at high speed as long as you keep pressing the button.
To resume a normal playback, release the button.

To locate a scene quickly (skip scan)
Keep pressing ◀◀ during rewinding, or ▶▶ while advancing the tape rapidly.
You can monitor the picture at high speed as long as you keep pressing the button.
To resume a normal fast forwarding or rewinding, release the button.
To resume a normal playback, press ▷.

Selecting the Monitor Sound

(T-2)

You can select the playback sound with the Hi-Fi SOUND switch.

When playing back a Hi-Fi stereo sound recorded tape
Set the switch to "green postion."

When playing back an AFM monaural sound recorded tape
Set the switch to "green position."
Monaural sound comes from both audio jacks.

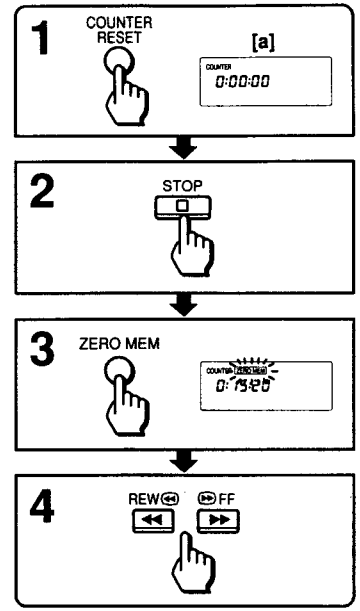
When playing back a dual sound track tape
Set the switch to "1" or "2".

Displaying the Viewfinder Screen Indicators on the TV

(T-3)

Press DATA SCREEN on the Remote Commander.
The indicators in the viewfinder screen appear on the TV.
To erase the indicators, press DATA SCREEN again.

(U)



Using the Tape Counter

During recording or playback, the digits on the counter indicate the actual recording or playing time.

Indexing the Whole Tape

(U)

Press COUNTER RESET at the beginning of the tape so that the counter shows "0:00:00."

Returning to a Pre-registered Point

1 **During playback, press COUNTER RESET at the point you later want to locate.**
The counter shows "0:00:00."
[a] Display window

2 **Press □ when playback has finished.**

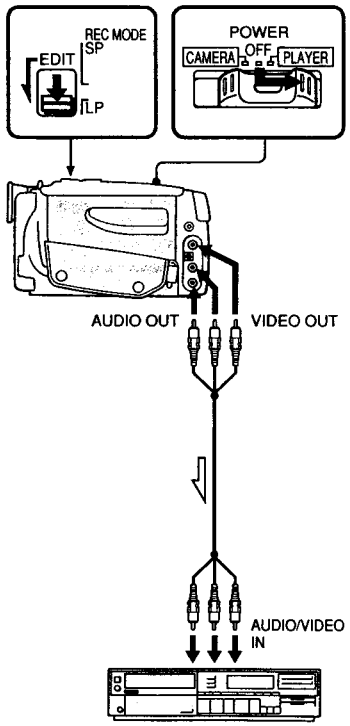
3 **Press ZERO MEM.**
The "ZERO MEM" indicator flashes in the display window and inside the viewfinder.

Note
Be sure to press ZERO MEM after you stop the tape. It does not function during recording or playback.

4 **Press ◀◀ or ▶▶.**
The tape rewinds or advances and stops automatically when the counter reaches approximately zero.

Notes on the tape counter and ZERO MEM
- The counter reading and the point on the tape may not correspond exactly. Use the counter as a guide. There will be a time lag of several seconds especially when you repeat fast-forwarding/rewinding and play back a tape recorded in LP and SP modes mixed.
- The ZERO MEM mode is canceled automatically once the tape is rewound or sent forward to the point you pre-registered.

(V)



: Signal flow

Editing onto Another VTR

You can create your own video programme by editing with any other 8 mm, Hi8 Hi8 mm, β Betamax, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC VTR that has video/audio inputs.

Before You Begin

- Make connections using the supplied A/V connecting cable. **(V)**
- Set the input selector of the VTR to LINE, if available.

Operation

1. Insert a tape to be recorded on into the recording VTR.
2. Move EDIT on the camcorder in the direction of the arrow. (EDIT ON)
3. Set the POWER switch of the camcorder to PLAYER and insert your recorded tape.
4. Play back the tape on the camcorder and locate the point where you want to start editing and set the camcorder to the playback pause mode.
5. On the recording VTR, locate the recording start point and set the VTR to the recording pause mode.
6. Press II on the camcorder and on the VTR simultaneously to start editing.

To stop editing momentarily, press II on the VTR.

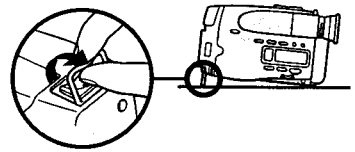
To edit more scenes, repeat steps 4 to 6.

To stop editing, press □ on the camcorder and on the VTR.

Use of the EDIT switch
When you set EDIT in the direction of the arrow (EDIT ON), picture deterioration resulting from editing can be kept to the minimum. Don't use the edited tape for multiple generations of editing. After editing, move EDIT in the opposite direction of the arrow (EDIT OFF).

(W-1)

(W-2)



Hints for Better Shooting

Getting Stable Pictures

Assume good posture for shooting (W-1)
For hand-held shots, it is important to hold the camcorder properly.

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the camcorder with your thumb.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. When adjusting the focus manually, make sure the camcorder does not move.
- Stand opposite the object and let your feet take a comfortable stance.
- Place your eye firmly against the viewfinder eyecup.

Use a tripod
If you have a tripod for a still camera, it can also be used with the camcorder. If a tripod is not available, try placing the camcorder on a table top or any other flat surface of suitable height.

Note
When attaching a non-Sony tripod, make sure that the length of the camera mounting screw is less than 6.5 mm. Otherwise, the screw may damage the inner parts of the camcorder.

Use the built-in stand (W-2)
This camcorder has a built-in stand at the bottom. Lift it up until it clicks and place the camcorder on a flat surface, such as a table.
Use the stand when:

- You want to correct any camera-shake.
- You record the subject using the Remote Commander.

Do not attach a shoulder belt through the stand.

Keep the horizontal plane level
The horizontal plane can be easily determined by using the viewfinder frame as a reference.

(W-3)

Hints for Better Shooting

Lighting

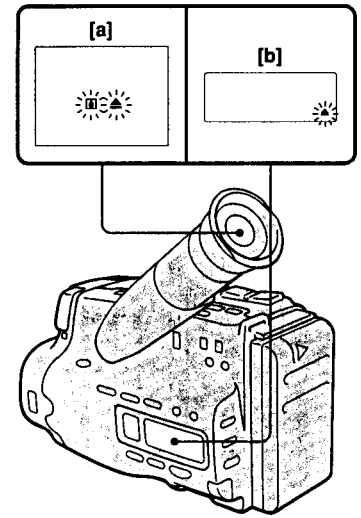
(W-3)

Shoot with the sun behind you
When the light source is behind the subject, or in the following situations, the subject will be recorded too dark and the background too light.

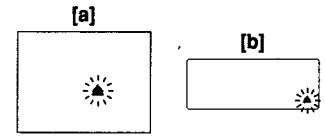
- The subject is indoors and there is a window behind the subject.
- Bright light sources such as fluorescent or incandescent lamps are included in the scene.
- You are shooting a person wearing white or shiny clothes in front of a white backgrounds. In this case, the face will be recorded too dark.

Use video light in the dark
To get the best colours, you must maintain a very high lighting level. When using a video light, attach it to this camcorder with a video light attachment (not supplied.)

(X-1)



(X-2)



Notes and Precautions

Notes on Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with a moisture sensor. However, take the following precautions:

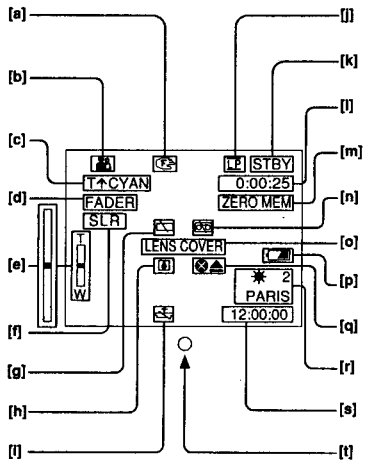
If moisture condenses inside the camcorder (X-1)
When the ⊡ and ⏏ indicators inside the viewfinder **[a]** and the ⏏ indicator in the display window **[b]** flash, moisture condenses inside the camcorder. In this case, no function except for cassette ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette holder open for about 1 hour.
The camcorder can be used again if ⏏ indicator does not appear when the power is turned on again.

If moisture condenses on the surface of the tape (X-2)
If moisture is present on the surface of the tape when the tape is inserted and a tape transport button (▷, ▶▶, etc.) is pressed, the ⏏ indicator flashes inside the viewfinder **[a]** and in the display window **[b]**.
In such case, no function except for tape ejection will work.
Eject the tape and let it sit for about 1 hour.
The tape can be used again if the ⏏ indicator does not appear when the tape is inserted and a tape transport button is pressed.

If moisture condenses on the lens
No indicator will appear, but the picture becomes dim.
Turn off the power and leave the camcorder unused for about 1 hour.

Indicators inside the Viewfinder and in the Display Window

(Y-1)



Inside the Viewfinder

(Y-1)

[a] Manual focusing

[b] Setting of PROGRAM AE mode

[c] Title mode

[d] FADER is pressed.

[e] POWER zoom indicator/Exposure indicator

[f] Digital picture indicator

[g] "Replace battery."

[h] "Moisture has condensed."

[i] "Replace lithium battery."

[j] Recording/Playback mode (LP/SP)

[k] Tape transport and camera recording mode

[l] Tape counter

[m]ZERO MEM is pressed.

[n] "Exchange tape or no cassette inside."

[o] The lens cover is closed.

[p] Remaining capacity of battery

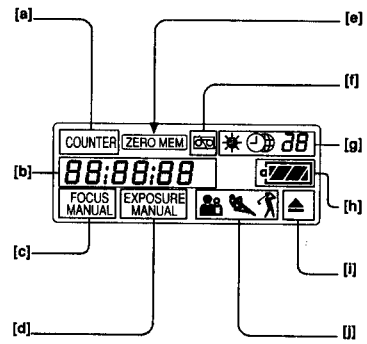
[q] "Clean video heads (⊗)" or "trouble has occurred (⏏)".

[r] World clock indicator

[s] Date or time

[t] Lights up during recording.
When flashing: "Replace battery."

(Y-2)



Display Window

(Y-2)

[a] Tape counter indicator

[b] Date, time, or tape counter

[c] Manual focusing

[d] Adjusting exposure manually

[e] ZERO MEM is pressed.

[f] "Exchange tape or no cassette inside."

[g] World clock indicator

[h] Remaining capacity of a battery

[i] "Trouble has occurred."

[j] Program AE setting